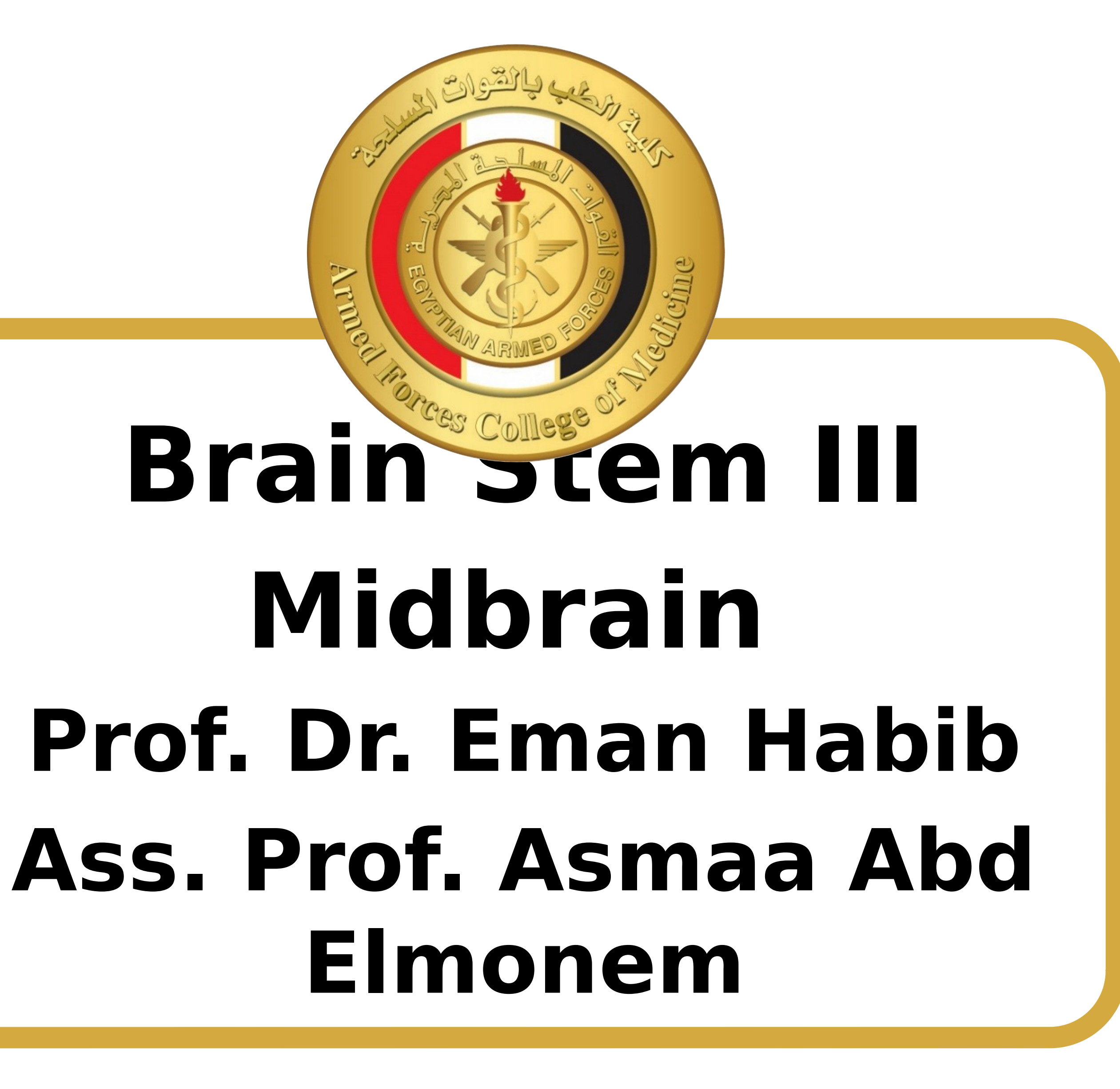



# Armed Forces College of Medicine
## AFCM




# Brain Stem III
# Midbrain

**Prof. Dr. Eman Habib**

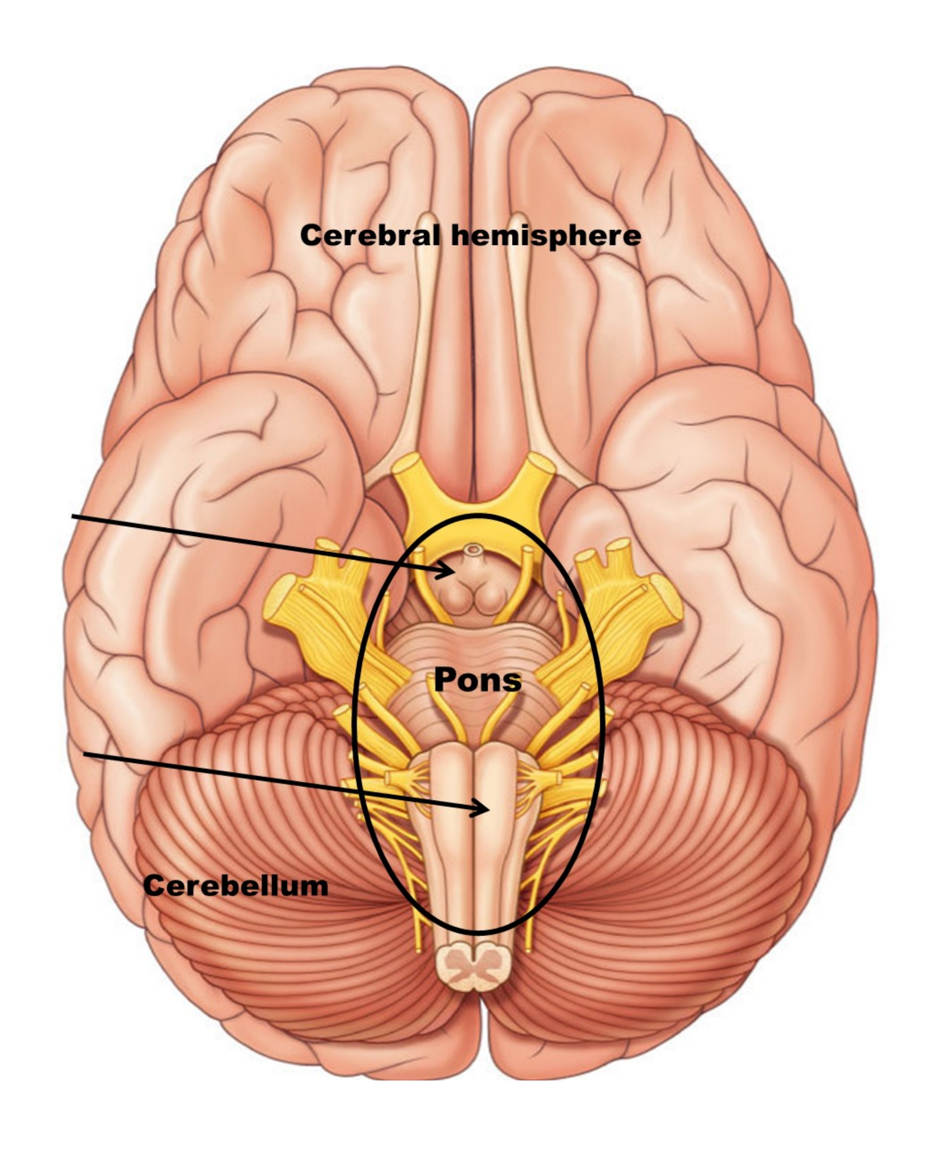
**Ass. Prof. Asmaa Abd Elmonem**

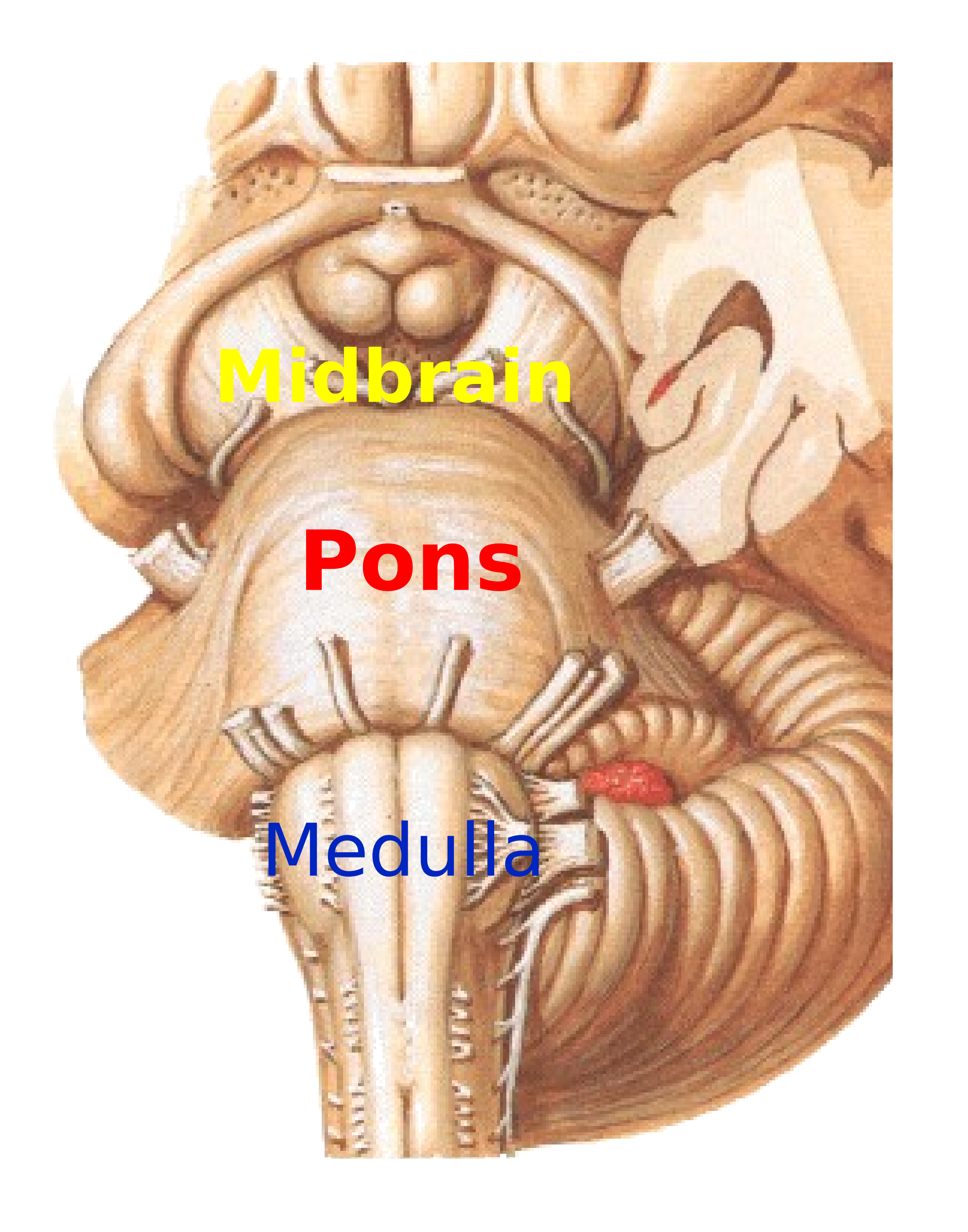
# INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. **Describe gross morphology of ventral and dorsal aspects of Midbrain**
2. **Describe superficial attachments of cranial nerves.**
3. **Locate different nuclei and mention their functions**
4. **Describe the internal structure and**


Cerebral hemisphere
Pons
Cerebellum

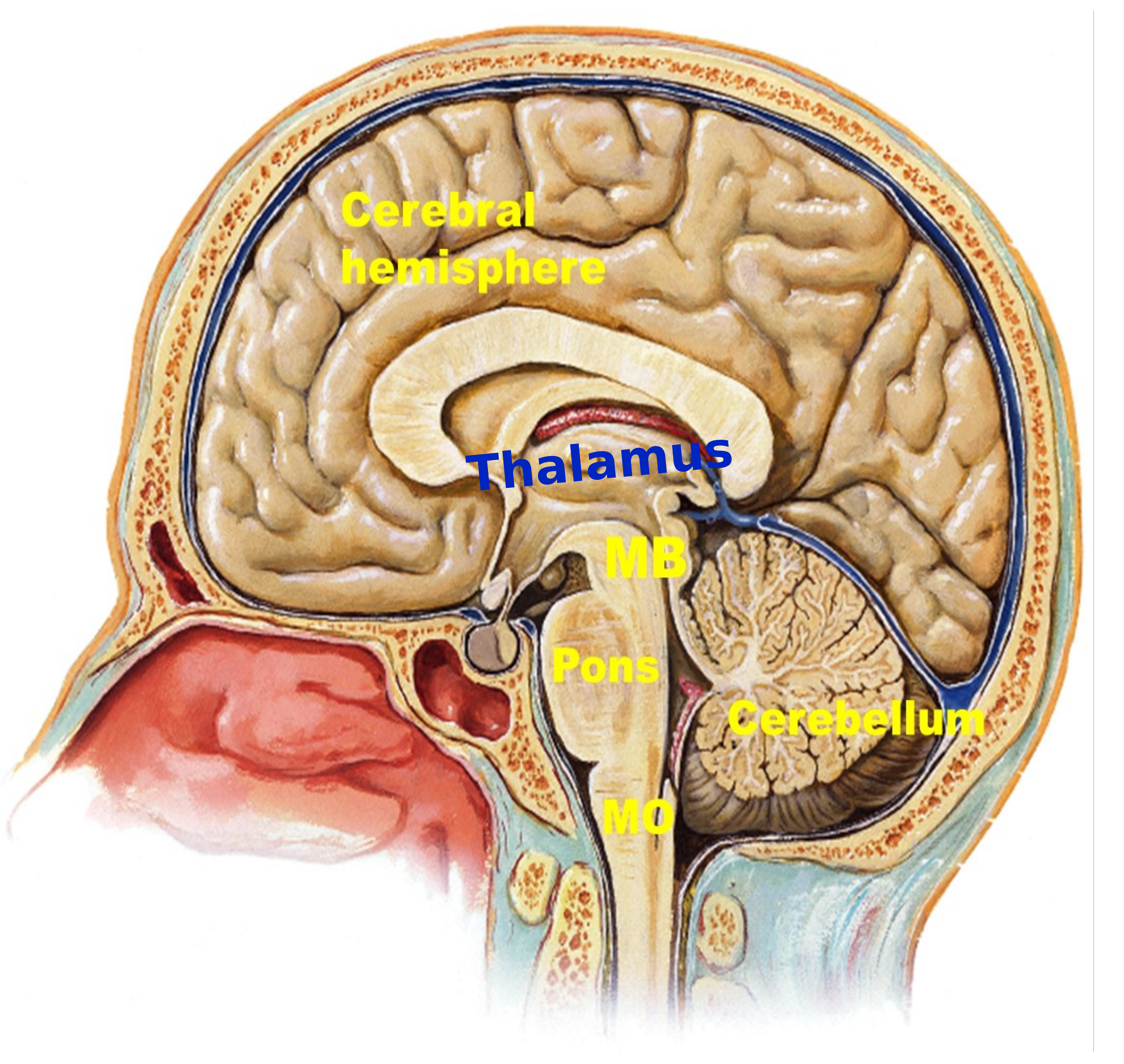

Midbrain
Pons
Medulla

# Midbrain

# Midbrain

**Extension:**

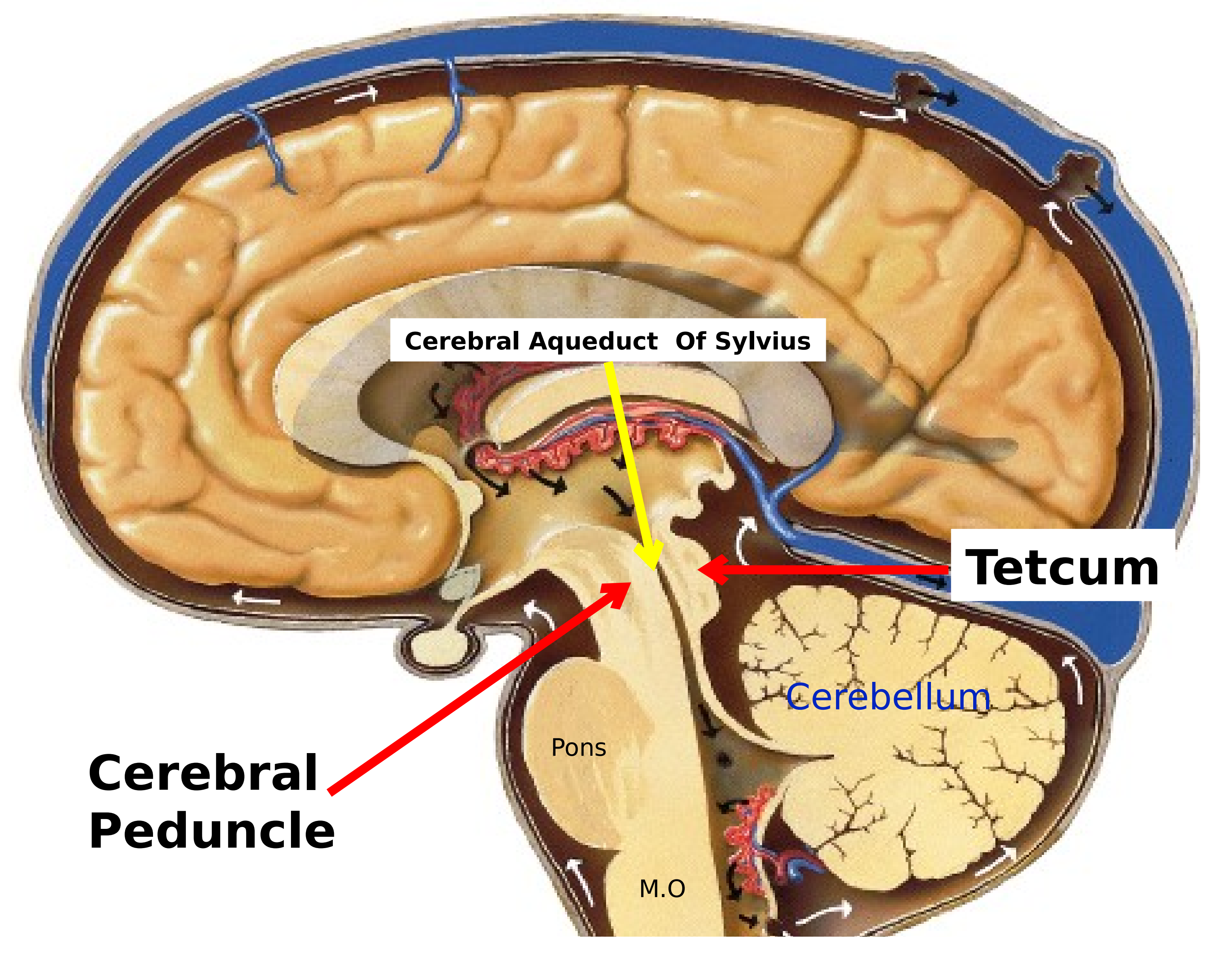
**Below: the upper bor**
**pons**
**Above : thalamus**



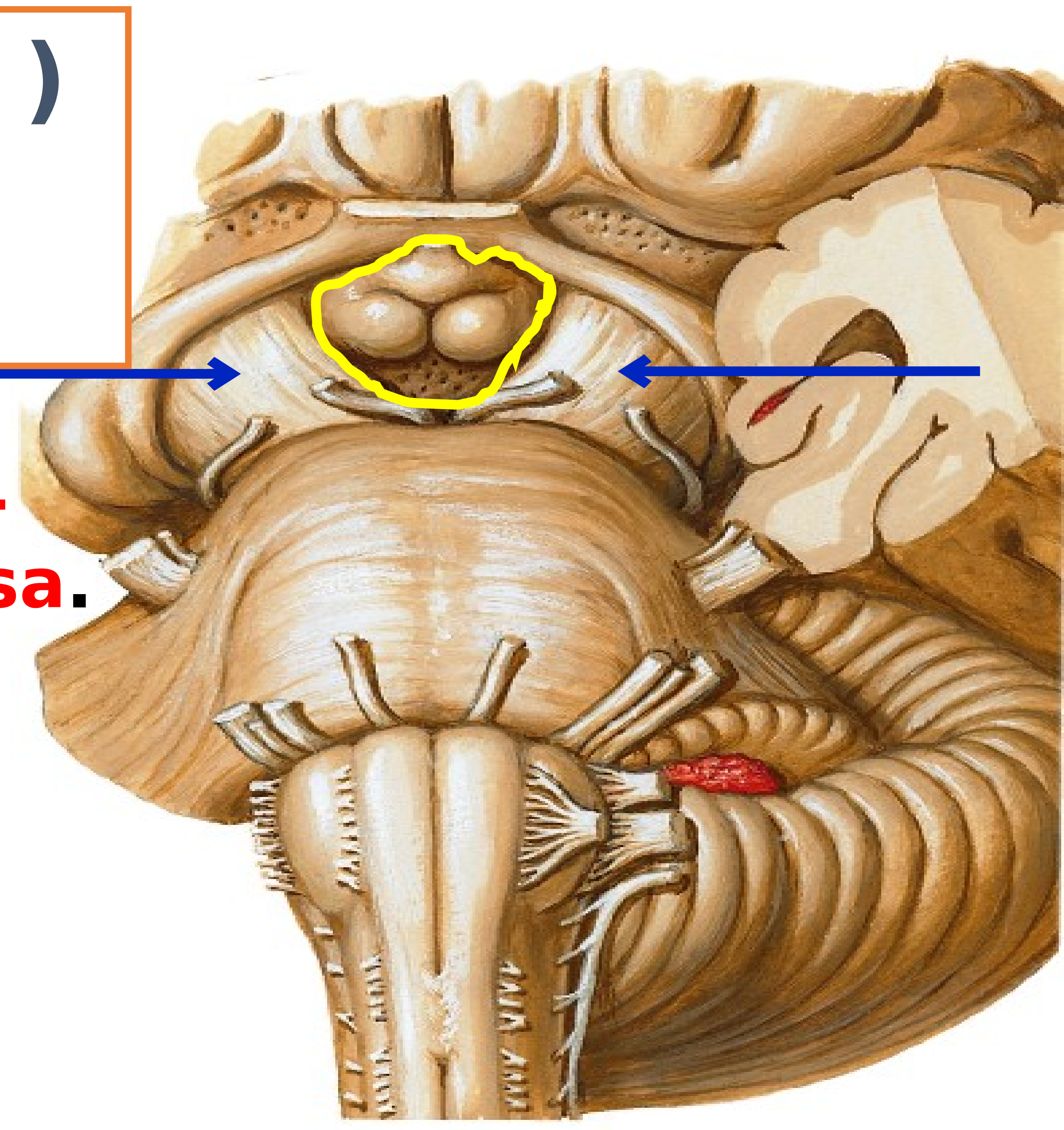
# Midbrain

**Cavity:**
**cerebral aqueduct of sylvius.**

**Parts:**
**it is divided by its cavity into**
- **Cerebral Peduncle in front**
- **Tectum behind.**



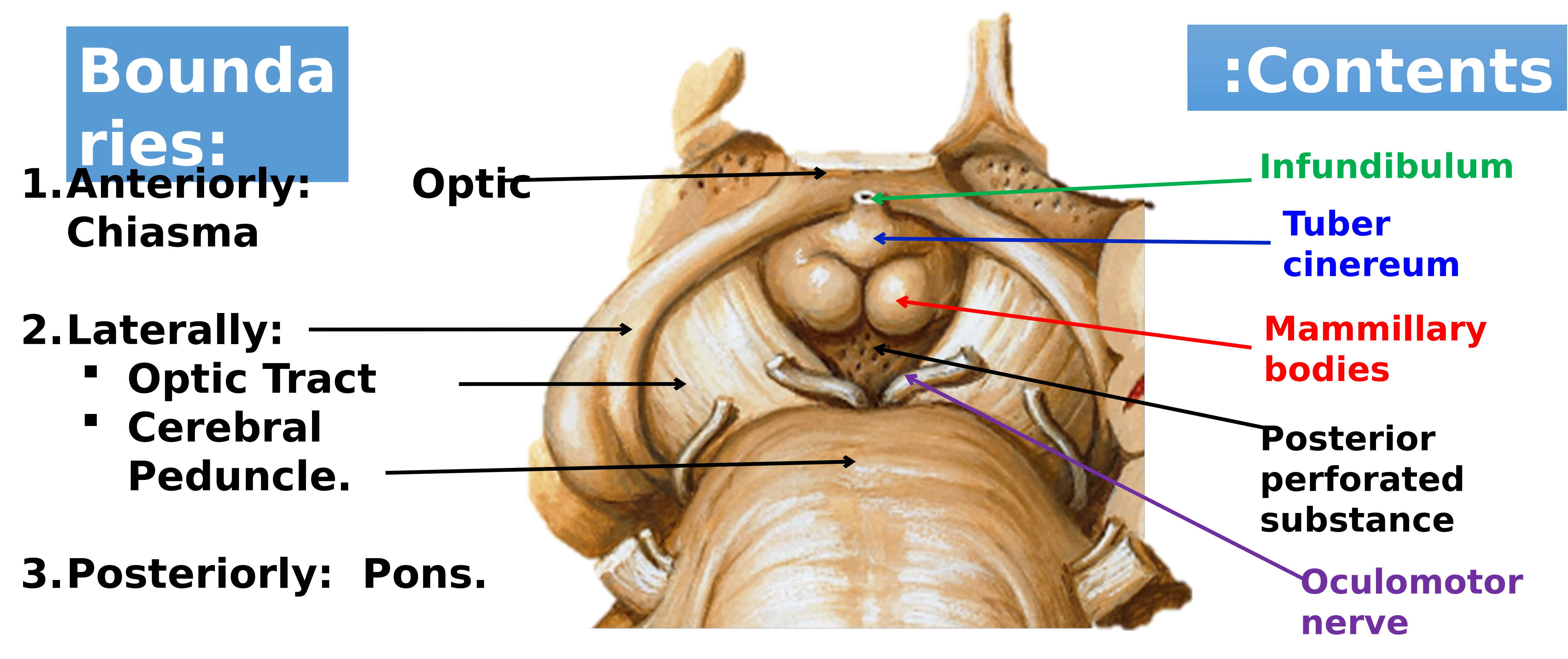
# Ventral (Anterior ) surface of Midbrain



peduncles enclosing inter-peduncular fossa.

# Interpeduncular Fossa

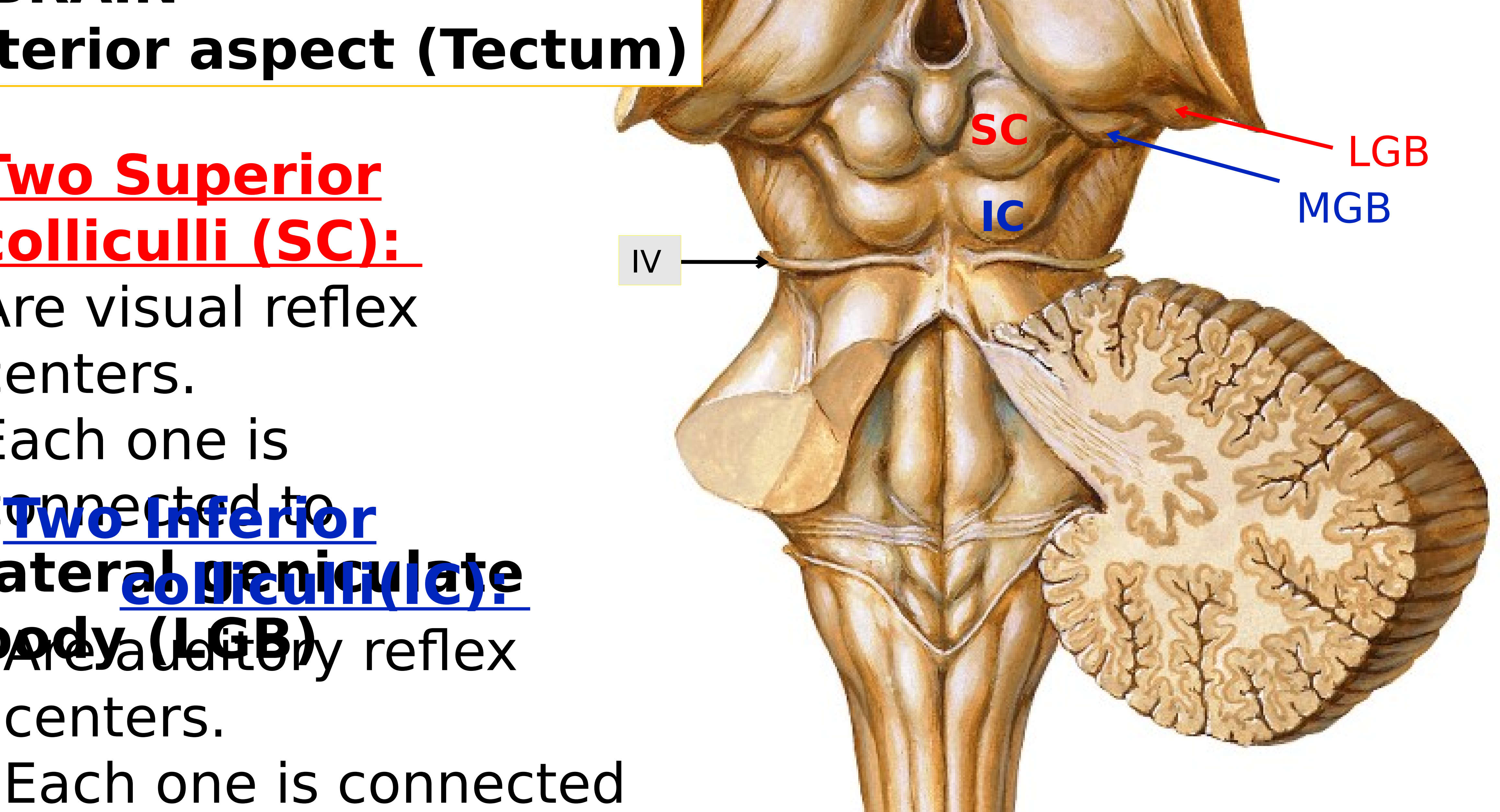
is a trapezoid depression between the 2 cerebral p
It does not belong to the midbrain but to the hypo



# IDBRAIN
# osterior aspect (Tectum)

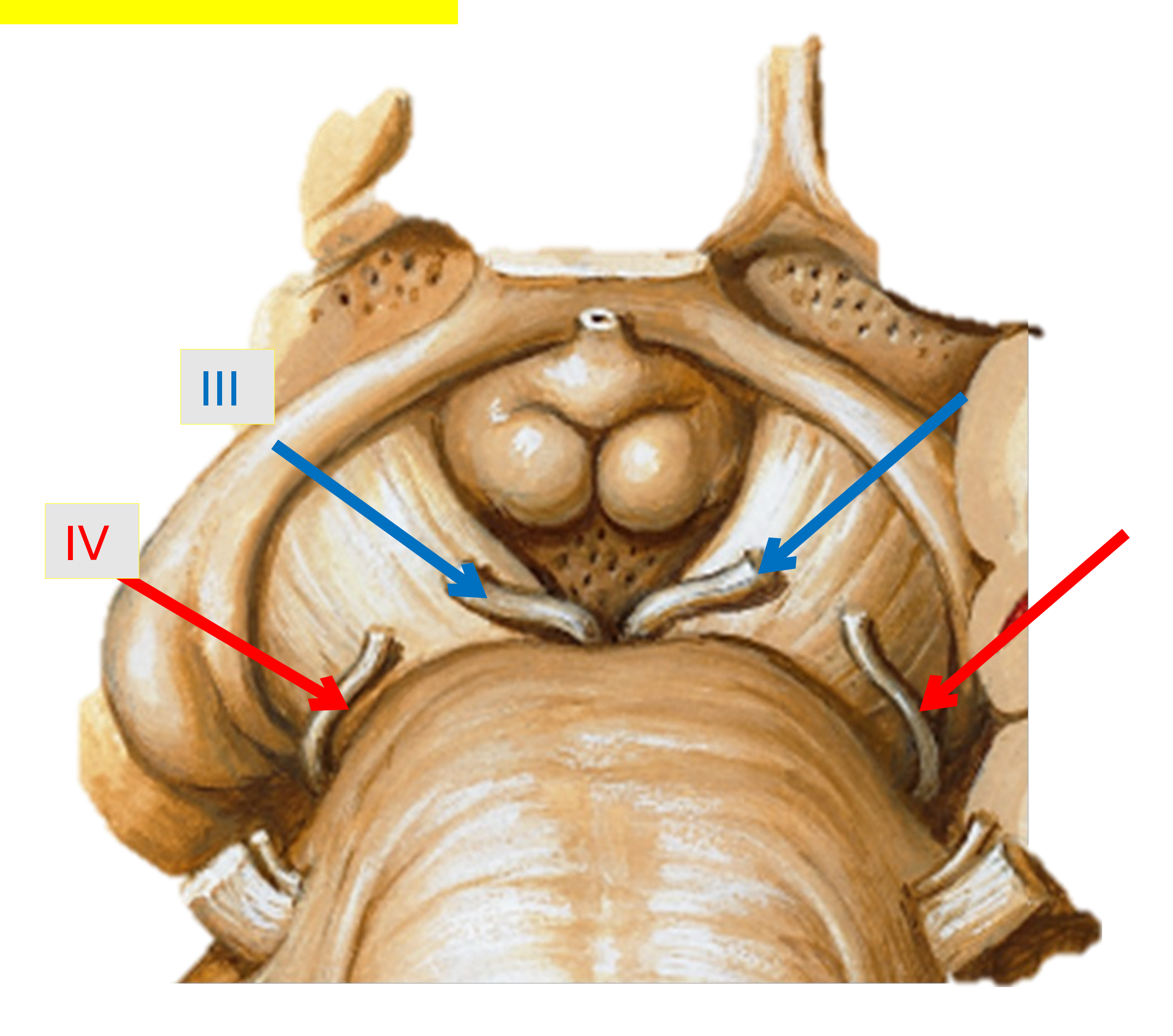
**Two Superior colliculli (SC):**
Are visual reflex centers.
Each one is connected to **lateral geniculate body (LGB)**

**Two Inferior colliculli(IC):**
Are auditory reflex centers.
Each one is connected



# erficial attachments of cranial nerves

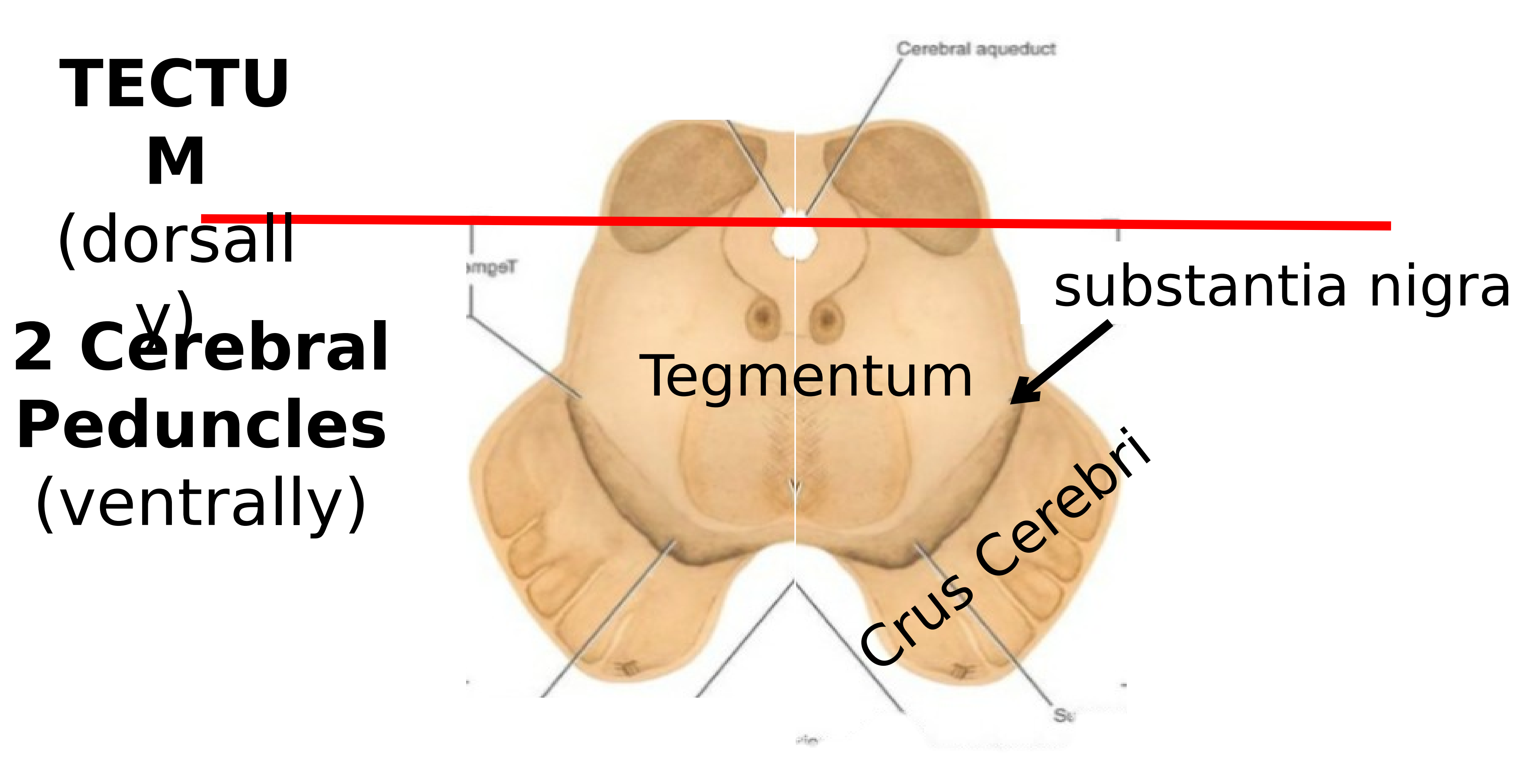
II
Interpeduncular fossa
Optic tract
Cerebral peduncle
III
IV
MIDBRAIN
V
VI
VII
VIII
PONS
Basilar sulcus
MCP
Pyramid
Olive
ICP
IX
X
XI
XII
MEDULLA
Pyramidal decussation



# nal structure of mid

**TECTUM**
(dorsally)

**2 Cerebral Peduncles**
(ventrally)

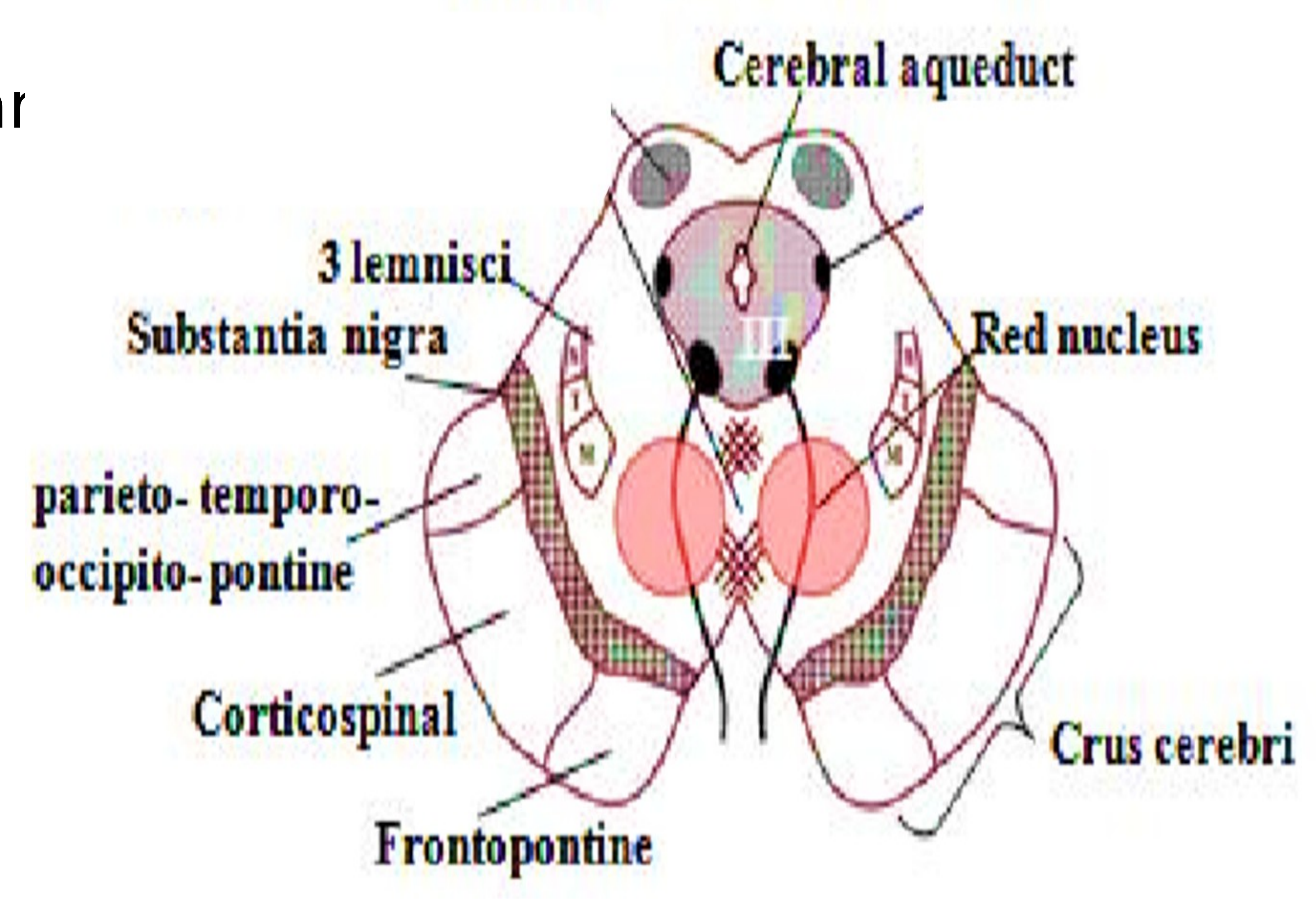


# nternal structure of midbrai

## ..Crus cerebri:

- Is the most anterior par
- Contains descending fibers
- arranged as follows:

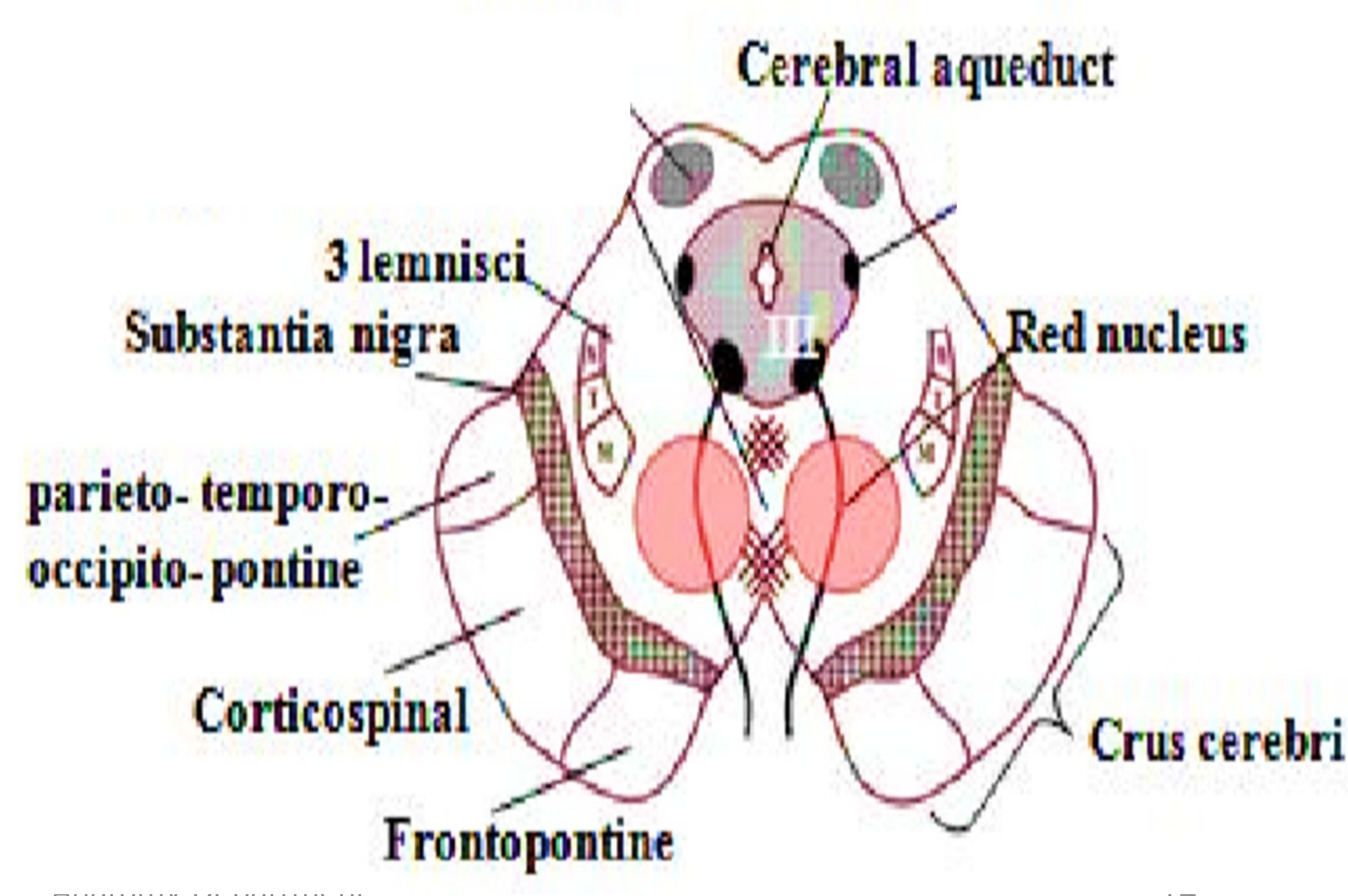
➢ medial 1/5: fronto-pontine
➢ lateral 1/5: parieto-temporo- & occipito pontine
➢ middle 3/5: cortico-



# nternal structure of midbrain

## 2. Substantia nigra:

- A pigmented sheet of grey matter between the crus cerebri and tegmentum
- It is formed of neurons containing melanin pigment.
- Their lesion leads to Parkinsonism.



# Midbrain levels

upper level

SC

IC

IV

lower level

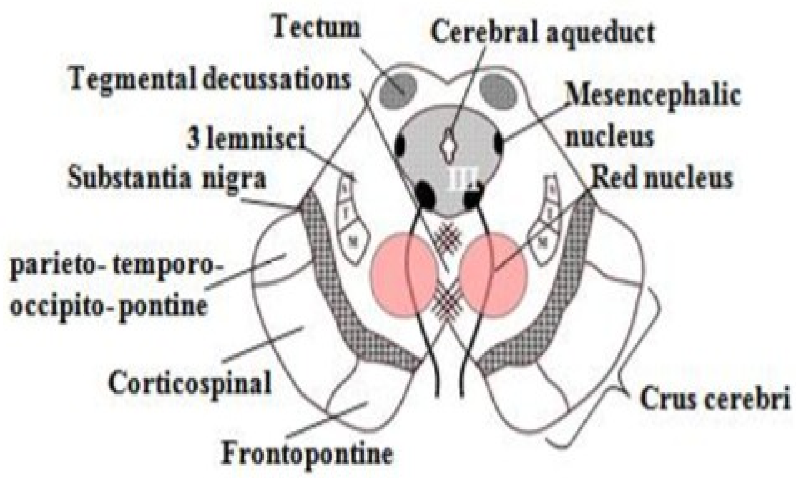



Figure 52: T.S in midbrain at upper level

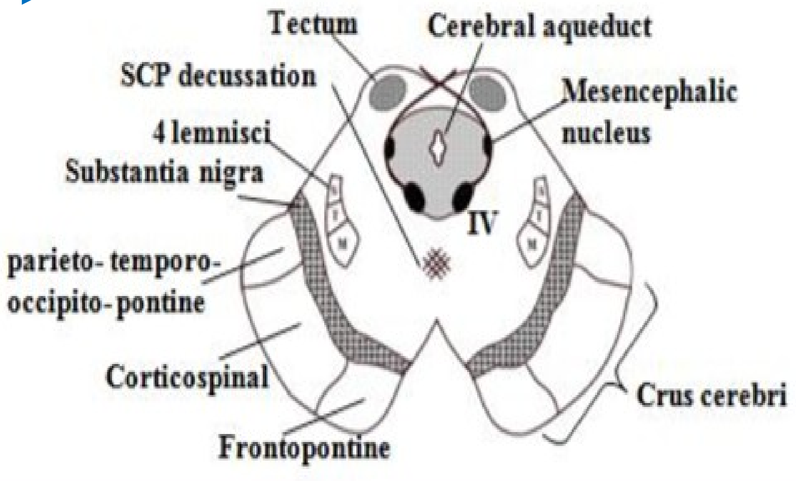


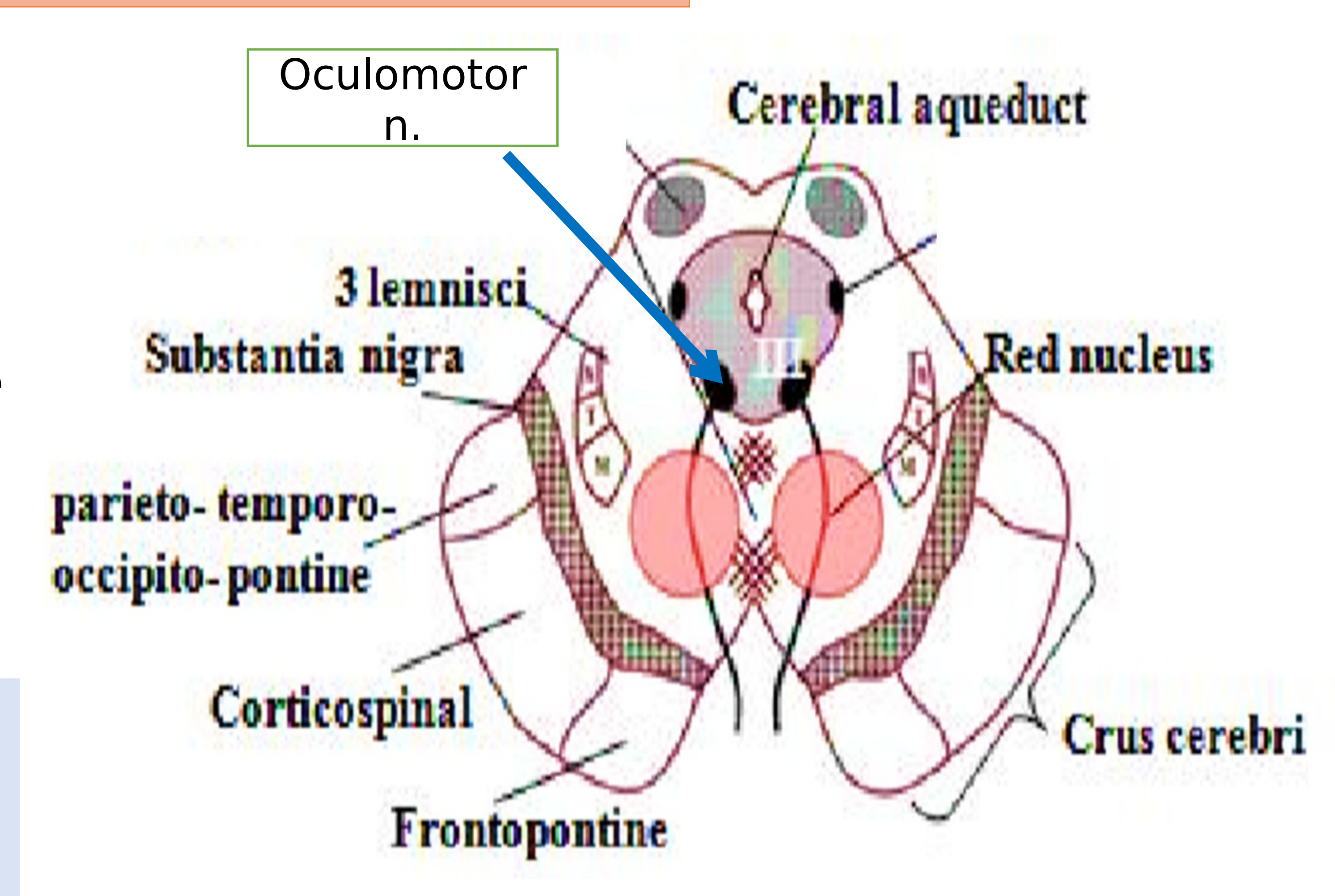

Figure 53: T.S in midbrain at lower level

# Midbrain at upper level

**1- Oculomotor cranial nerve nuclei CR.N. III**

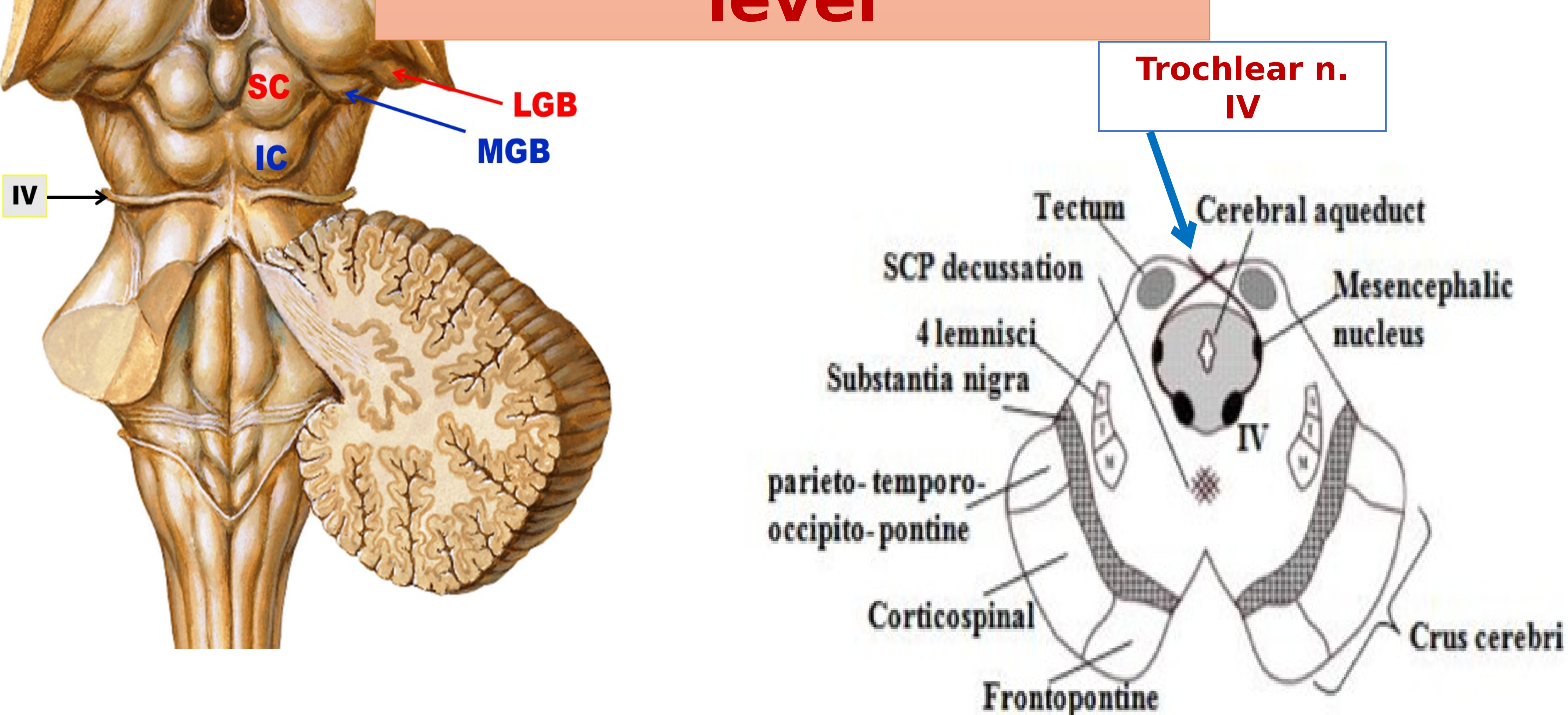
## 2- Red nucleus

- A large nucleus in the midbrain tegmentum at the level of superior colliculus.
- Appears red due to rich iron content.




**Function:-**
**facilitation of muscle tone**
**Motor learning**

# Midbrain at lower level

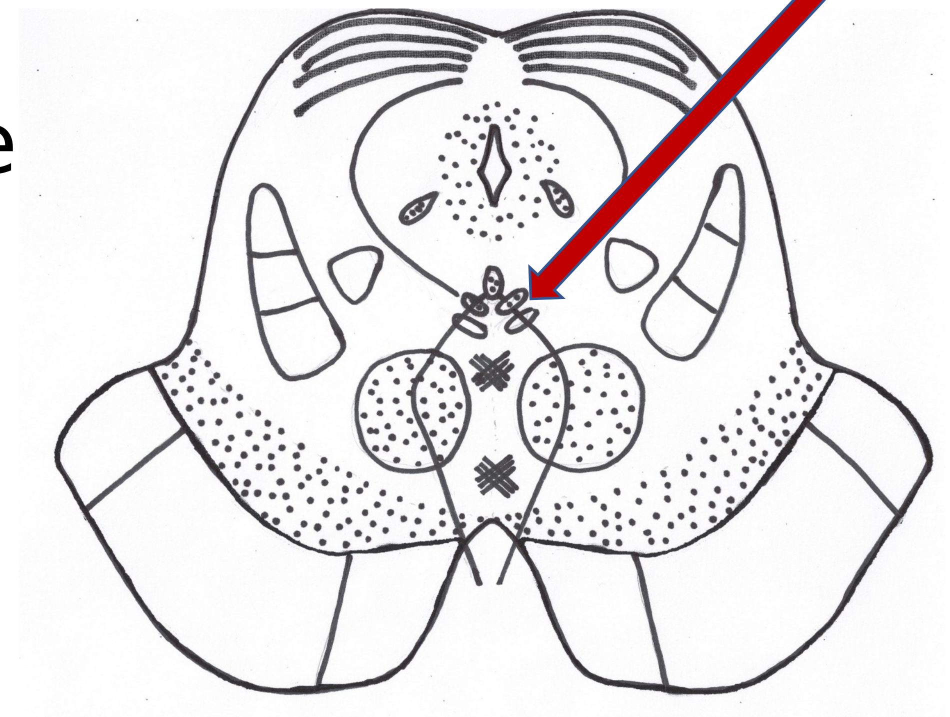


# Lecture Quiz



- **Which of the following structure is indicated by the arrow in the provided diagram?**

1. Mesencephalic nucleus of trige
2. Oculomotor nerve nuclei
3. Red nucleus
4. Superior colliculus nuclei
5. Substantia nigra nuclei



# Lecture Quiz



- **Which of the following statement is correct concerning a transverse section through the superior level of midbrain?**

1. Corticospinal fibers pass via lateral third of the crus cerebri.
2. The oculomotor nerve traverses the red nucleus.
3. The trochlear nerve emerges on the interpeduncular fossa.
4. The superior colliculi present in the tegmentum of midbrain.
5. The central gray matter encircles the red nuclei.